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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/742,255	CHEDGEY ET AL.	
	Examiner	Art Unit	
	Chuck O. Kendall	2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 11-21* is/are pending in the application.

4a) Of the above claim(s) *10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 11-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the application filed 02/28/07.

2. Claim 1 – 9, and 11 – 14 have been amended and claims 15 – 21 were previously presented.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1, 3, 13 and 14 are rejected under 35 U.S.C. 102(b) as being unpatentable over Koza et al. USPN 5,490,246.

Regarding claim 1, Koza anticipates a software analysis tool comprising:

means for converting software entities and their relationships into a graph having a first structure of nodes interconnected by edges (FIG. 16, and all associated text),

said graph further comprising a tree comprising a plurality of subtrees, each said subtree representing one or more nodes in first structure, the relationship among the

plurality of subtrees representing the edges among nodes in the first structure (FIG. 16 also see FIG. 2 PROGN, PRINT, SEQ, HELLO, WHEN);

and an editor comprising means for allowing a user to edit the graph; wherein the software entities comprise nongenetic software program code (26:19 – 25, see editing operation).

Regarding claims 3, a software analysis tool as claimed in claim 1 or 2, wherein the editor comprises means for automatically generating fresh graph layouts after manipulation (Koza, 26:20 - 40).

Regarding claims 13, Koza anticipates a dependency analysis system recorded on a computer-readable medium, comprising:

an abstraction layer for providing a uniform interface to third party analysis tools (koza, FIG. 16, and all associated text, also see abstract for externally invoked sub entities);

a graph model data structure for storing dependency information derived through the abstraction layer from third-party tools (koza, FIG. 16, and all associated text);

said graph model structure comprising a first structure of nodes interconnected by edges, said graph model structure further comprising a tree comprising a plurality of subtrees, each subtree representing one or more nodes in the first structure the relationship among the plurality of subtrees representing the edges among nodes in the first structure, (Koza, 20:15 – 40).

a rendering system for providing a plurality of views of the graph model data structure (Koza, 20:15 – 40).

Regarding claims 14, Koza anticipates a dependency analysis system comprising:

a data structure stored in computer memory representing a hierarchy of graphs each said graph having a first structure of nodes interconnected by edges, said graph further comprising a tree comprising a plurality of subtrees, each said subtree representing one or more nodes in the first structure, the relationship among the plurality of subtrees representing the edges among nodes in the first structure (FIG. 2, e.g. PROGN, PRINT, SEQ, HELLO, WHEN);

a rendering system for displaying the hierarchy of graphs (Koza, 26:19 – 25, see editing operation);

a user interface responsive to a user action indicating a command to expand a displayed node, the user interface causing the rendering system to replace the displayed node with one or more embedded child nodes in response to user action (Koza, 26:19 – 25, see editing operation).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 11 – 12 and 15 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koza et al. US 5,742,738 in view of Brotsky.

Regarding claim 11, Koza discloses said graph further comprising a tree comprising a plurality of subtrees, each said subtree, representing one or more nodes in the graph, and substrees representing the edges as well as replace the displayed node with one or more embedded child nodes in response to the user action (FIG. 16, and all associated text). Koza doesn't expressly disclose a node class for instantiating node objects in memory representing aspects of an analyzed system as nodes of a graph having a first structure; a connection class for instantiating connection objects in memory representing dependencies between aspects of an analyzed system; an edge class for instantiating edge objects representing collections of one or more connections or edges.

However, Brotsky discloses an object oriented graph representation language which uses nodes classes (17: 5 – 10), a connection class (19:45 – 65, see Transducers and class) and an edge class (17: 12, see graphics operator class).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Koza and Brotsky because, it would enable implementing it in an object oriented environment.

Regarding claim 12, the dependency analysis system of claim 11, further comprising:

at least one subclass of the node class, the subclass being specific to a particular category of system (Koza, FIG. 16, see 1620).

Regarding claim 15, as in claim wherein a one to many mapping from a first directed graph to a second directed graph, wherein every element in the first directed graph corresponds to exactly one element in the second directed graph, and any element in the second directed graph corresponds to one or more elements in the first directed graph (Koza, 9:60 – 10:20, see corresponding entity and crossover).

Regarding claim 16, see rationale in claim 15 above.

Regarding claim 17, as in claim 1 a meta node and edge representing a first child graph, said first child graph further comprising a meta node and edge representing a second child graph (Koza, FIG. 24, and all associated text).

Regarding claim 18, see rationale in claim 15 above.

Regarding claim 19, see rationale in claim 15 above.

7. Claims 20 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Koza et al. US 5,742,738 in view of Hoppe US 6,108006

Regarding claim 20, Koza discloses a system for representing the relationship among elements of a complex system comprising:

a tree comprising a plurality of subtrees each said subtree comprising a root node and one or more nodes (FIG. 16); and

a relationship among the root nodes of said subtrees, said relationship including a dependency relationship (FIG. 16). Koza doesn't expressly disclose where for each pair of said subtrees not sharing any common node there exists a relationship between the root nodes of said pair of subtrees, if there exists a relationship between a node in

one subtree of said pair of subtrees and a node in the other subtree of said pair of subtrees.

However, Hoppe in an analogous art and similar configuration discloses relationship between separate trees (vertex hierarchy), see (FIG. 18, and all associated text) and refinement dependency between them (3:35 – 40). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Koza and Hoppe because it would make runtime evaluation of the set of selective refinement criteria faster (Hoppe, 3:35 – 40).

Regarding claim 21, the system of claim 20, wherein the complex system is a software comprising a plurality of software entities and the relationship includes reference dependency among the software entities (Koza, FIG. 16).

9. Claims 4 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koza et al. USPN 5,490,246 as applied in claim 1, in view of Perttunen USPN 6,359,635.

Regarding claim 4, Koza discloses all the claimed limitations as disclosed in claim 1 as well as comprising software program code, as discussed above in claim 1. Koza, doesn't explicitly disclose wherein the conversion means comprises a plurality of back-ends, each being associated with an aspect of a software system. However, Perttumen discloses a backend (21:58-60 for backend see database). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was

made to combine Koza with Perttumen because, it would allow the system to be able to retrieve or store information and hence make it more efficient.

Regarding claim 5, a software analysis tool as claimed in claim 4, wherein each back-end comprises means for converting the entities and the relationships of the associated aspect into nodes and edges of the graph (Koza, 25: 60 – 65).

Regarding claim 6, a software analysis tool as claimed in claims 4, wherein the back-ends are associated with managers (Pertumen, 21:58-60).

Regarding claim 7, a software analysis tool as claimed in claim 6, wherein the managers comprise means for routing commands between the editor and the back-ends (Pertumen, 21:58-60, also see Koza for editor 26:19 – 25, see editing operation).

Regarding claim 8, a software analysis tool as claimed in claims 6, wherein each manager is associated with a group of back-ends associated with a group of back-ends (Pertumen, 21:58 – 60).

Regarding claim 9, a software analysis tool as claimed in claim 8, wherein the back-ends associated with a particular manager share a common interface and set of operations (Pertumen, FIG. 17, 156).

Allowable Subject Matter

8. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

"...wherein the conversion means comprises means for bi-directionally folding and unfolding a graph between meta and child levels"

Response to Arguments

9. Applicant's arguments filed 02/28/07 have been fully considered but they are not persuasive.

Argument (1), Applicant argues on page 8 of his response that Koza doesn't disclose "a tree structure that represents the relationship between entities" as required by claim 1. He further discloses that the the tree structure of Koza doesn't comprise a first structure of nodes interconnected by edges and a tree comprising of subtrees each of which represents one or more nodes in the first structure.

Response (1), Examiner believes that Koza does in fact disclose this feature. In Koza in FIG. 2, Items 730, 742 and 756, Koza distinctly shows a tree structure with a relationship of instruction entities (e.g. PROGN, PRINT, SEQ, HELLO, WHEN) as well as comprising a tree hierarchy with sub trees/levels.

Argument (2), Applicant argues on page 9, that Koza is only directed to genetic programs, and that claim 1 has been amended to include non-genetic software programs.

Response (2), Although Applicants claim language claims comprising non-genetic software program, the term "non-genetic" doesn't appear any where in the specification also, Applicant doesn't identify any where in his argument and his current amendment where support for this new amended term is present in the specification. It appears that Applicant is arguing for a negatived limitation and doesn't provide any support for his argument other than stating that Koza merely recites a genetic program whereas he doesn't. Hence Applicant's argument is moot.

Regarding Applicants argument in claims 11 – 19, Applicant also that Koza is directed to genetic programming so based on the Examiner's response above, Applicant's argument is also moot.

Regarding Applicant's argument in claim 20 and 21, Applicant argues that Koza and Hoppe are both not analogous art based on problem solving using genetic programming. Hence Applicant's arguments in claims 20 – 21 are also moot for the same reason as stated above in response (2).

Examiner has withdrawn the previous rejection of claim 2, however is still maintaining the rejection of claim 3 as Applicant's claim depends on claim 1 or 2 and not on claim 2 per se.

Regarding claims 4 – 9, Applicant argues that Koza and Pertunen are both not analogous art based on problem solving using genetic programming.

Hence Applicant's arguments in claims 4 – 9 are also moot for the same reason as stated above in response (2).

Regarding Applicants argument in claims 4 – 9, with regards not teaching nodes with interconnected edges and nodes, see Examiners response (1), as Applicant apprears to rehash similar arguments previously presented above in argument 1.

Correspondence information

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuck Kendall whose telephone number is 571-272-3698. The examiner can normally be reached on 10:00 am - 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached on 571-272-3695. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ck.

Chuck Kendall 4/30/07